

REVIEW

MAY/JUNE 1998

Larry Neal is a professor of economics at the University of Illinois at Urbana-Champaign.*

The Financial Crisis of 1825 and the Restructuring of the British Financial System

Larry Neal

Today's financial press reports regularly on evidence of systemic risks, financial fragility, banking failures, stock market collapses, and exchange rate attacks throughout the global financial network of the 1990s. To a financial historian, these reports simply reprise similar concerns and risks in numerous episodes of financial innovation and regime change in the past. True, the 1990s have the peculiar feature of emerging markets among newly independent states that are trying to market either their government debt or securities issued by their former state enterprises. But this situation does not eliminate the relevance of past episodes; it merely limits it to fewer periods. The period after World War I had many of the same problems, for example, although policymakers then subsumed them largely under the issues of whether, when, and how to return to the pre-war gold standard that had created a much more benign financial system worldwide. Policymakers of that time were much more interested than their modern counterparts in exploring lessons from the past.

For example, William Acworth's classic study, *Financial Reconstruction in England, 1815-1822*, was published in 1925. He argued convincingly that the severe deflationary policy followed by the government and the Bank of England after peace in

1815 had prolonged and deepened unnecessarily the economic troubles accompanying the transition from a wartime to a peacetime economy. Nevertheless, the British government and the Bank of England pursued much the same strategy after World War I, again taking six years after the peace treaty to resume convertibility—and at the prewar standard. Again, monetary ease that followed resumption led to a surge of prosperity, speculative ventures in the capital markets, and eventual collapse of the financial system. The difference was that in 1825-26, there was a systemic stoppage of the banking system, followed by widespread bankruptcies and unemployment, while in 1931 there was abandonment of the gold standard, followed by imperial preference and worldwide movements toward autarky. So much for the lessons of history!

As pessimistic as Acworth was in assessing the consequences of Britain's first return to the gold standard in 1821, the consequences of the ensuing monetary expansion and speculative boom that ended in the spectacular collapse at the end of 1825 proved to be not so dire in the long run for the British economy. The policy changes that affected the monetary regime—the exchange rates, the structure of the banking sector, the role of the Bank of England and the management of the government's debt—while minor in each particular and slow to take effect, were cumulatively effective in laying the basis for Britain's dominance in the world financial system until the outbreak of World War I. This outcome contrasts sufficiently with the disappointing pattern of British economic progress during the twentieth century after both World War I and World War II that perhaps we should take a fresh look at the economic and financial transition after the Napoleonic Wars. What caused the problems identified by Acworth that culminated in the stock market crash of 1825 and the English banking system's failure to

* The author acknowledges with gratitude the support of the University of Illinois during his sabbatical leave of 1996-97 as well as the Guggenheim Foundation and the British Fulbright Commission, for research efforts on this project. This version of the paper has benefited not only from the comments of the discussant, Michael Bordo, and participants at the conference, but also from comments and suggestions made during seminars at the University of Illinois (especially Lee Alston and Salim Rashid), Indiana University (especially George von Furstenberg and Elmus Wicker), and the Research Triangle in North Carolina (especially Douglas Fisher, Judith Klein, and Gianni Toniolo). Remaining shortcomings and misinterpretations of the facts are, of course, the sole responsibility of the author.

withstand its impact? More important, why did the British government's relatively modest reforms prove to be so effective in the long run? Perhaps we can glean more useful lessons for today's policymakers than previous historians have been able to provide.

The argument developed in this paper is that the common element in all the problems of Britain's first return to gold arose from the pressures of coping with vastly increased informational uncertainties within the existing structure of English institutions.¹ These problems started with the Treasury itself, confronted by the difficulties of servicing the huge government debt accumulated during the Napoleonic Wars and deprived of its primary source of revenue, the income tax. They continued within the Bank of England, forced now to take on new responsibilities while searching for new sources of revenue to replace its wartime profits. They were compounded by the response of the London capital market, which produced a bewildering array of new financial assets to its customers to replace the high-yielding government debt now being retired. All this left the London private banks and their corresponding country banks—as well as their customers in agriculture, trade, and manufacturing—floundering in the resulting confusion. The government's piecemeal reforms, introduced during the crisis of 1825 and its immediate aftermath, provided smoother patterns of tax collections and interest disbursements, established Bank of England branches throughout England, stimulated country bank competition with joint-stock companies outside of London, and eliminated the Bubble Act of 1720. Even the bankruptcy laws began to be rewritten in 1831.²

These disparate reforms made marginal improvements in the efficiency of information gathering and processing by the government, the central bank, the banking system, and the stock market while preserving the separation of functions among them. Maintaining these “firewalls” among the types of institutions making up the financial sector of the British economy diminished the immediate impact of the

reforms, but it enabled them to become increasingly effective over time. True, crises continued to arise throughout the rest of the century as the British economy was subjected to repeated shocks of wars, famines, frauds, and foreign defaults. But the evolving financial sector of the British economy surmounted each crisis with increasing confidence, and all the while these firewalls were preserved. The firewalls meant that relationships among financial intermediaries and financial markets had to be maintained by short-term contracts in a competitive market environment rather than by regulations imposed by centralized authority with long-term rigidity.

The focal point for these new market relationships was the market for discounted commercial bills that arose rapidly in importance after the crisis of 1825.³ Once again, as in earlier crises and in those that were to follow until World War I, the British financial sector was able to find a market solution to the problems created by its relatively inefficient and disparate financial institutions. In the longer run, the flexibility of response provided by the combination of markets and financial intermediaries coexisting in the British financial system enabled it to withstand exogenous shocks and to finance expansion of the real economy. To elucidate and elaborate this argument, I analyze, in turn, the shock to the financial system of shifting from wartime to peacetime finance in 1821, the financial crisis that occurred at the end of 1825, the Bank of England's efforts to pick up the pieces, and, finally, the rise of a market in discounted commercial bills that put things right again—for awhile. The lessons of each episode highlight the importance of appraising the financial system as a whole, rather than focusing on what appears to be its weakest link. In retrospect, it seems critical to allow information to flow freely among the various parts of the system in order that markets may form to price and intermediate risk. At the time, the Bank of England refused to divulge important information and remained aloof from market activity until it was forced to act, usually too late. Only gradually were

¹ Note the emphasis on English, rather than British, institutions. The Scottish and Irish banks avoided the Panic of 1825 almost entirely, a fact that caused much soul-searching among the English at the time.

² Duffy (1985), ch. 1.

³ King (1936), ch. 2.

these lessons learned; now is not the time to forget them.

THE SHOCK: FROM WARTIME TO PEACETIME FINANCE IN 1821

In the expansion of war finance that the Napoleonic Wars induced in Britain, all parts of the British financial system prospered. At the top, the Treasury benefited from increased taxes, especially the income tax, as well as the expanded market for its debt, both long-term, funded debt and short-term, unfunded debt. The Bank of England profited throughout the Napoleonic Wars as the government's agent for fiscal transfers both at home and abroad throughout the most expensive war fought in history to that time. It increased its annual dividend to 12 percent from 7 percent in 1805 (reduced back to 10 percent in 1807), greatly enlarged its staff, built new facilities at its location on Threadneedle Street, and expanded its note issue as well as its advances to merchants and manufacturers in London.⁴ The business of the London private banks expanded at the same time that foreign merchants fleeing the extortions of Napoleon's troops brought their affairs to London.⁵ Country banks multiplied in great number and profited by issuing small-denomination banknotes to replace metal coinage in the domestic circulation after the Bank of England suspended convertibility in February 1797, and the restrictions against issuing small-denomination notes were suspended in March 1797.⁶ In short, the entire British financial sector enjoyed prosperity on the basis of war finance.

True, the commercial crisis of 1810 brought the Bank of England's prosperity—and arrogance—under close scrutiny by its enemies and led to the Bullion Report of 1810. By undermining the intellectual authority of the Bank's directors, the Bullion Report provided the courage needed for subsequent governments to constrain the Bank's power and to overrule its recommendations on monetary matters if that became politically popular. The Bank's

practical autonomy, however, remained intact as the government still relied on it for managing its remittances and, especially, its recurrent issues of debt—both long-term, funded debt (perpetual annuities comprised mainly of 3 percent consols) and short-term, unfunded debt (one-year Exchequer bills bearing daily interest). The Treasury at this point was the Bank's strongest defender against the criticisms of the Bullionists, arguing that the needs of war finance justified the fall in the exchange rate of the paper pound.

As a result, for three years after the signing of the peace treaty in Paris in 1815, the government acquiesced to the Bank's various arguments that resumption of cash payments should be delayed—whether until the exchanges had stabilized, or the bond market had strengthened, or foreign trade had picked up, or its gold reserves were increased. Finally, in 1819, the government initiated a bill to force the Bank to resume convertibility, after initial experiments in 1817 at limited convertibility of Bank notes had succeeded without any harmful consequences. Even so, the Bank managed to make the transition as difficult as possible, first by amassing a large stock of gold, which helped keep up the price of gold in the markets, and then by withdrawing the notes from circulation that the government used to repay £10,000,000 of Exchequer bills that had been held by the Bank. Further, it refused to lower its rate of discount on bills and notes even as its loan business to the private sector declined. The resulting price deflation intensified both agricultural and manufacturing distress but enabled the Bank to resume full convertibility of notes into coin in May 1821 and to skip almost entirely the intermediate step of limiting convertibility to ingots of 60 ounces, as proposed by Ricardo. While, at the time, Ricardo criticized the Bank's directors as “indeed a very ignorant set,”⁷ it appears to later historians that the Bank was responding angrily to the government's efforts to use the Bank to support its short-term debt financing while taking away the Bank's power to control the level of its own liabilities.⁸

⁴ Clapham (1945), vol. 2, ch. 1.

⁵ Chapman (1984), p. 4.

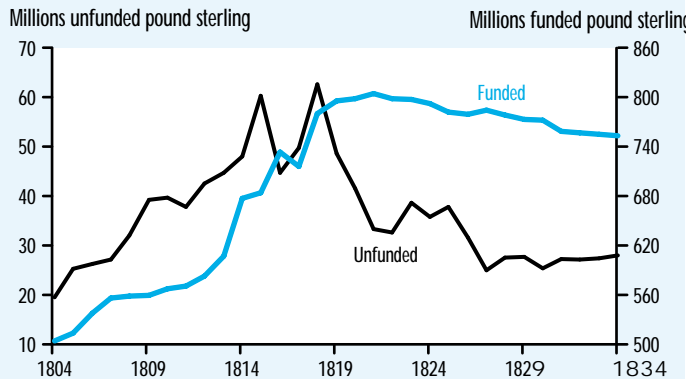
⁶ Pressnell (1956), pp. 142-44.

⁷ Letter to Malthus of July 19, 1821, in Works, IX, p. 15 as cited in Fetter (1965), p. 98, n. 11.

⁸ Hilton (1977), p. 54.

Figure 1

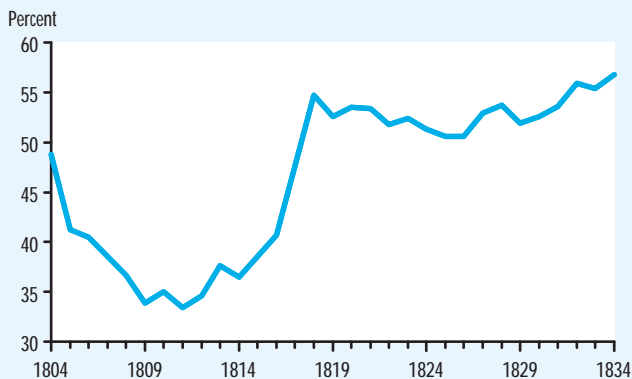
National Debt of the United Kingdom Nominal amounts, funded and unfunded



SOURCE: Mitchell (1988), p. 601.

Figure 2

British Debt Service/Revenue



SOURCE: Mitchell (1988), pp. 581, 587.

The elimination of the income tax in 1816 brought an end to the mutually agreeable arrangements between the Treasury and the Bank that had existed during the war. The fall in tax revenues meant a sharp rise in the ratio of tax revenues that the government had to devote to servicing the huge debt accumulated during the war. Figures 1 and 2 show clearly the rise in government debt during the war, the ease with which the mounting debt was serviced while the income tax existed, and then the constraint upon the government's peacetime budget created by the continuing debt service. In the absence of an emerging revenue source,

it was a serious shock to the Treasury to lose an income stream that had amounted to nearly 20 percent of its total gross income in 1816 (£14.6 million) and had virtually vanished by 1818.⁹ This was the shock that forced readjustment throughout the entire British financial system, from the Treasury right down to the country banks.

The Treasury confronted this situation with a variety of ploys. One was to raise the price of its long-term bonds in the London Stock Exchange so that new debt at lower interest rates could be issued in order to reduce its expenditures on debt service. It preferred to reduce this form of expenditure rather than cut back on traditional sinecures of the royal family and the landed aristocracy or reduce further the army and navy. Expenditures had to be cut not only because the repeal of the income tax had reduced revenue, but also because of the fear of further losses of revenue that might follow from reductions in various customs duties and excises. Counterarguments that both foreign trade and domestic commerce would increase in response to lower tax rates enough to generate the same revenues as before failed to persuade a timorous government. A few experiments were tried, some of which proved successful, but in the prevailing disturbed monetary conditions, any reductions in protection levels were vehemently opposed by manufacturing interests. The government was forced to find its budget balance in reduced debt service. By 1821, it became increasingly possible to do this.

Figure 3 shows the course of prices for the major government "stocks," namely the price of 3 percent consols, Bank of England stock, and East India Company stock, over the period 1811-31. The price of consols, with their constant £3 interest payment each year, reflects inversely the default risk-free yield on long-term debt. Its pattern shows clearly the increasing pressures of war finance during the Napoleonic Wars and the rocky road traversed by the British debt overhang in the decade-and-a-half following Waterloo. In the period encompassing the resumption of specie payments, from late summer 1820

⁹ Mitchell (1988), p. 581.

to late 1822, the price of all three securities rose. With their dividend rates maintained at wartime levels, this meant the market yields on each fell for first-time investors. The actual market yields available to investors in "the funds," as they were known at the time, are shown in Figure 4. There was clearly a period of marked recovery from the trade crisis of 1819, when it was finally determined that Bank of England notes would again be convertible into gold at the pre-suspension mint par. A check occurred, however, at the end of 1822 that lasted until the spring of 1823. Then the upward course in price (and fall in yields) resumed for a year, leveling off from March to September 1824. The government's success in managing its debt service problem after resumption led to unusually low interest rates, especially in 1824, the year preceding the boom and bust of 1825.

The charts of prices and yields for "the funds" illustrate nicely the problems created by the transition from wartime to peacetime finance. The price patterns of the three major securities available to risk-averse British investors changed their relationship from moving in synchrony to diverging unpredictably. The capital stock of both the East India Company and the Bank of England was invested in permanent government debt, on which the government paid regular interest. Typically, the two chartered monopolies passed this interest payment through to their shareholders along with some part of the profits obtained from their business activities. The dividends declared by the two had increased over the eighteenth century but rose to all-time highs during the Napoleonic Wars. The Bank's business as the remitting agent for the government's war finance has already been mentioned. The East India Company gained from absorbing all the Asian trade previously serviced by the French and Dutch East India companies while the hostilities lasted. However, it was assessed a huge annual sum by the government, purportedly as compensation for the naval and military services the government provided for the protection of the East India Company's trade.

Figure 3

Price Levels of "The Funds" London Stock Exchange

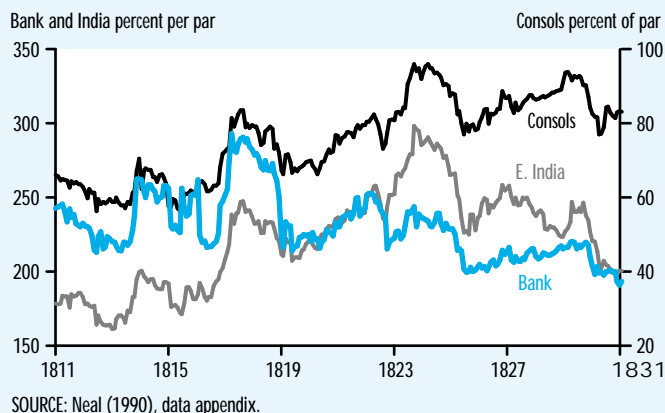


Figure 4

Yields on "The Funds" End of month



A crossover in the prices of Bank of England and East India Company stock emerged clearly at the beginning of 1823 and widened through 1824. Part of the decline in the Bank's stock was certainly due to its decision in 1823 to drop its semi-annual dividend from £5 per £100, which had remained constant from 1807 through 1822, to £4 per £100. It remained there through 1838 before dropping again.¹⁰ The Bank was steadily withdrawing from its discount business, husbanding reserves, and fending off Parliamentary pressures to resume convertibility. The East India Company, meanwhile, was in its final phases as a trading company in the period 1813-33

¹⁰ Clapham (1945), v. II, p. 428.

and faced with a mounting problem of encroachment by noncompany English traders in the exports of Indian goods to Britain. To counter this, the company was allowed to maintain its monopoly on all British trade with China. It was in the 1820s that the company's import of trade goods from India began to feel the pressure of competition—in 1826-27, they imported no goods whatsoever from India.¹¹ So it was the prospects of the continued China monopoly, and the earnings on monopoly pricing of tea for British consumers, that raised its market value in the early 1820s and the decline in Indian trade that lowered it in the mid-1820s.

In the early period from 1811 until 1819, by contrast, the London stock market had established a stable price relationship among the three securities. The market yield on East India Company stock was always the highest of the three. Presumably, this situation reflected the higher risk associated with the stock. The directors succeeded in keeping the dividend rate high at a steady 10 percent per annum throughout this period, but there was always a high risk that the government would either increase its charges on the company or reduce its source of profits, say by returning Ceylon and Indonesia to the Dutch. The much lower market yield on Bank stock reflected the perception that the Bank's business with the government was assured and even less risky than the government's financial affairs. The Bank stock's market yields were always lower than those available from the 3 percent consols, at least until 1819. This is not as counter-intuitive as it may first appear, because the amount of Bank stock was fixed by terms of its most recent charter, while the supply of "Three Per Cents" kept changing unpredictably with the shocks to the government's finances.

All this changed, however, with the Resumption Act of 1819. The Bank's stock was assessed by the market to be then as risky as that of the East India Company. The success of actual resumption in full in 1821 appears to have reassured the market that it was less risky than the stock of the East India Company, whose fate was still a matter of intense discussion and dispute.

At times, Bank stock even appeared less risky than consols. The crisis of 1825 disrupted further the price and yield patterns. Thereafter, consols were clearly judged the safest security, East India Company stock became priced with a higher risk premium yet, and Bank stock was priced with a risk premium that seems to have risen steadily toward the fateful year of 1833, when its charter was up for renewal.

It may be helpful to put this argument, derived from visual inspection of the price and yield charts, in terms more familiar to modern financial analysts. The visual evidence is that the three major components of "the funds" were co-integrated in the period up to 1819 and presumably for a number of years before 1811. At some point in the period of conflict between the Bank and the government over the timing and terms of resumption of cash payments, from 1819 to 1821, the co-integrating relationship was broken. Table 1 presents the results of some formal testing of the statistical hypotheses implied by this argument.¹² The top panel demonstrates that the prices of all three securities probably followed random walks, both during the period 1811-20 and the period 1821-30. This is reassuring evidence that the market was at least weakly efficient in pricing each security. That is, there was no obvious trading rule that investors could use to make consistent profits by knowing when prices would rise or fall.

The second panel shows the results of Dickey-Fuller tests to see if there existed co-integrating relationships between each pair of securities in each subperiod. These indicate that co-integration did exist between 3 percent consols and both Bank of England stock and East India Company (EIC) stock in the first subperiod, 1811-20. This is sensible, as the dividends for both the Bank and the EIC rested in large part on passing through the interest payments each company received from the government. However, no co-integration existed between Bank of England and East India Company stock. This is also reasonable, because each company's additional earnings above the interest payments received from the government were

¹¹ Clapham (1967), p. 487.

¹² I am grateful to Marc Weidenmier for his expertise in carrying out this analysis for me.

Table 1

Co-Integration of the Funds and Market Index on the London Stock Exchange: 1811-20 and 1821-30

Panel A. Integration Diagnostics

1811-20	D-F Test	ADF	1821-30	D-F Test	ADF
Bank of England	-2.01	2.08	Bank	-1.35	-1.26
EIC	-1.02	-1.11	EIC	-1.40	-1.50
Threes	-1.68	-1.54	Threes	-2.30	-2.20

Panel B. Dickey-Fuller Tests for Co-Integrating Regressions

1811-20	D-F Test	1821-30	D-F Test
Bank of England vs. EIC	-2.15	Bank vs. EIC	-1.80
Threes vs. Bank of England	-2.65*	Threes vs. Bank	-2.18
Threes vs. EIC	-4.27***	Threes vs. EIC	-2.01

Panel C. Johansen Tests for Co-Integrating Vectors

1811-20	λ_{MAX}	λ_{TRACE}	1821-30	λ_{MAX}	λ_{TRACE}
Bank of England vs. EIC	5.33	7.08	Bank vs. EIC	5.02	7.09
Threes vs. Bank of England	19.27**	26.70***	Threes vs. Bank	5.59	8.10
Threes vs. EIC	15.35*	26.93***	Threes vs. EIC	5.09	6.81

NOTE: The Dickey-Fuller statistics reported under the integrating diagnostics and the co-integrating regressions are the t-statistics to test if the residuals are stationary. Critical values are based on James Hamilton (1994), *Time Series Analysis*, Princeton University Press, Table B-6, Case 2, p. 763.

Critical values for the Johansen statistics are taken from Osterwald-Lenum (1992).

* denotes 0.10 or less probability that there was a unit root,

** a 0.05 less probability, and

*** a 0.01 or less probability.

determined independently of each other. But even the co-integration of each company's stock with consols disappeared in the second subperiod, 1821-30.

Because the length of each time period is relatively short by the standards of time series statistics, and the Dickey-Fuller statistics are relatively inefficient for small samples, the third panel uses the Johansen technique for testing for the existence of a co-integrating vector for each pair of securities. Again, it shows that such vectors likely did exist in the first subperiod between consols and both Bank of England and East India stock, but not between

Bank of England stock and East India stock, while no co-integration among any of the funds is evident in the second period. This reaffirms my argument that the transition from war finance to peace finance disrupted all the relationships within the entire structure of the British financial system, especially from 1821 on.

THE CRASH: FROM LATIN AMERICAN BONDS TO COUNTRY BANKNOTES

Eventually, the government managed to bring the government budget back into

balance and even run a small surplus, thanks mainly to reductions in the armed forces, especially the withdrawal of occupation forces from France after 1818. But in the period immediately following resumption of the gold standard, the government continued to make payments into the Sinking Fund, which was used to make periodic purchases of long-term debt at market prices and retire it. In effect, the Treasury was running open-market operations that increased liquidity in the economy. It did this by issuing Exchequer bills to the Bank and then using its credits with the Bank to retire some of the funded, long-term debt, mainly consols. Encouraged by the possibilities of retiring high-interest debt and reducing expenditures in this way, the government overreached in 1823. At the end of that year, the government converted £135 million of its 5 percent bonds to 4 percent bonds. It then continued to take advantage of monetary ease early in 1824 by converting £80 million of the 4 percent bonds to 3½ percent.¹³

This had a double-barreled effect, according to traditional accounts. On the one hand, British investors were disappointed to be receiving lower yields on their holdings in “the funds.” “Even in that day ‘John Bull could not stand two per cent.’”¹⁴ On the other hand, the Bank of England was now obliged to buy back the “deadweight” part of the annuity yielding 3½ percent that the government had issued to cover its expenditure on naval and military pensions but had failed to sell to the public. The Bank had ample reserves to accomplish this, having accumulated bullion for minting into coins to replace the £1 and £2 notes it had issued during the paper pound period (1797-1821). In fact, as late as October 1824 the Bank’s reserves amounted to fully one-third of its liabilities, and by February 1825 it had increased its holdings of public securities by 50 percent from the low of February 1822.¹⁵

This increase meant the Bank was also conducting open-market operations, inadvertently and unwillingly, that added to the monetary ease by placing cash in the public’s hands in exchange for the government securities they previously held. This was

done at the same time the Bank was drawing down its excessive gold reserves, a process that also increased public liquidity. John Easthope, a member of Parliament and a stockbroker, in his testimony to the Committee on the Bank of England Charter in 1832, argued that while the increase in the Bank’s note issue before 1825 was not so large, it should have been decreased in light of falling gold reserves.¹⁶ The episode he referred to was very likely the operations of Nathan Rothschild, who took advantage of the falling price of gold in Britain to borrow a large amount from the Bank to sell in France in November 1824.¹⁷ Later, in mid-1825, when the Bank became concerned about its falling reserves and the fall of stock prices, Rothschild agreed to repay the loan, restoring the gold in installments spread over the months of June, July, August, and September.¹⁸ The result was exceptional monetary ease in 1824 and into 1825, and then contraction in mid-1825, helping to bring on a payments crisis for country banks.

As Easthope argued, this was not the behavior one would want from a bank devoted to public service, although it was understandable behavior for a bank more concerned about the dividends it could pay to its stockholders than the general state of the monetary regime. On this point, the Bank’s defense was that the exchanges had turned against Britain in 1825, so it was necessary then to contract its note issue and restore its gold reserves. Yet the evidence produced by the Bank itself for the committee indicates that the exchange rate was never seriously threatened (see Figure 5), at least no more than in earlier and later fluctuations that were not accompanied by financial panics. Indeed, such fluctuations as occurred may have created profit opportunities for the House of Rothschild, which the Bank was only too happy to share in part without taking the risks incurred by Rothschild.

The dysfunction of the financial system created at the top by the separation of operations and objectives between the Bank and the Treasury spread even further, affecting the country banks. Confronted by the dis-

¹³ Gayer, Rostow, Schwartz (1975), vol. I, p. 185.

¹⁴ Gayer, Rostow, Schwartz (1975), vol. I, p. 185.

¹⁵ Pressnell (1956), p. 480.

¹⁶ Great Britain (1968), p. 469, item 5790.

¹⁷ Bank of England, Committee of the Treasury Minute Book, Oct. 29, 1823, to April 12, 1826, fo. 117. Rothschild on Nov. 30, 1824, requested a loan of £300 or £500,000 of bar gold at 77/10 1/2 per oz. and paid 3 1/2 percent per annum with collateral of stock. “As I may require about £225,000 value of Bar gold tomorrow, I beg to mention it to you, in order to facilitate the delivery.” The Bank’s Court of the Treasury complied with this application.

¹⁸ Bank of England, Committee of the Treasury Minute Book, May 26, 1825, fo. 161.

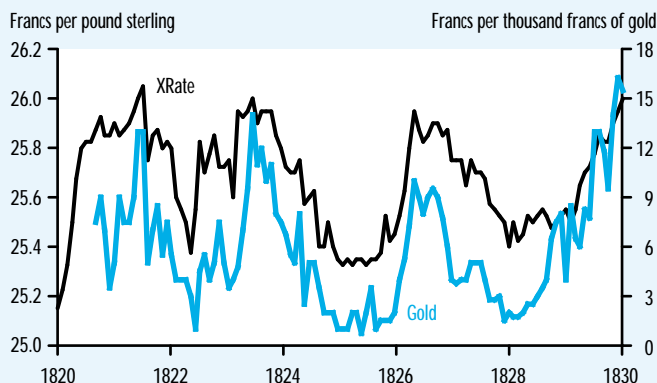
stress caused by severe and unanticipated deflation in 1819-21, the Treasury did not wish to renew its reliance upon the Bank for buying Exchequer bills, as it had done in 1817 in order to finance public works projects in the manufacturing districts and Ireland.¹⁹ Instead, it allowed the country banks to continue to issue notes of small denominations, deferring their elimination from circulation for 10 years. Instead of disappearing from the money supply in 1823, as previously provided in legislation of 1816 (which mandated their termination within two years after the Bank resumed cash payments), such notes were allowed to continue circulating until 1833.

The country banks, already providing necessary finance to manufacturing districts throughout England by the second half of the eighteenth century, found their business prospects greatly enhanced during the Napoleonic Wars.²⁰ Part of the reason was the expansion of heavy manufacturing in the Midlands and South Wales, part was the growth of foreign trade from outports other than London, and much was due to the role of country banks in remitting to London the government's revenues from the land tax, the stamp tax, and the income tax while it was in effect. The end of the war reduced the basis for all these activities and eliminated the income tax. Moreover, the continuing threat of cash resumption by the Bank of England meant that the profitable note-issue business would have to be wound up and replaced by some other form of revenue.

Into the breach stepped the stockjobbers and brokers operating in the London stock exchange. Their business, too, was greatly enhanced by the incredible increase in government debt issued during the wars of 1793-1815. It was interrupted briefly by the crisis of 1810, which foretold the difficulties the stock exchange traders would face when the war ended. In 1811, the response of stock traders was to enlarge greatly the list of securities available for investors in the London stock exchange. Canal stocks were especially favored, although a few other joint-stock companies were listed—iron-tracked railways, docks, waterworks, and a few gasworks. Trading

Figure 5

London's Exchange on Paris and Premium on Gold at Paris



SOURCE: Great Britain (1968), Appendix 97, pp. 110-11.

in most of these public-utility stocks was quite limited, however, as most shareholders preferred to hold them for their value as long-term assets and for their voting power. The various forms of government debt remained the most lucrative source of commission and speculative income for traders.

Latin American Securities

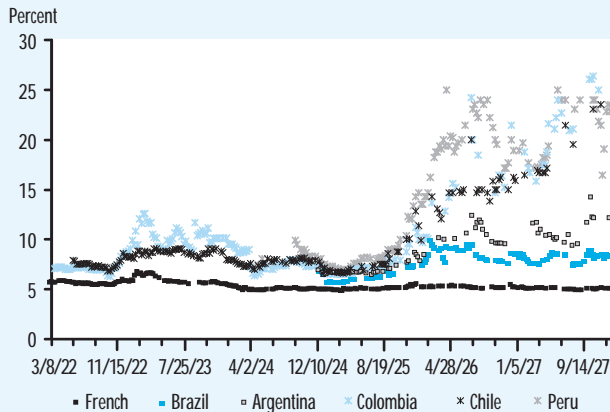
The withdrawal of foreigners from the British national debt after the war, however, removed one class of customers that had been most active in trading, while the rise in the price of government bonds reduced their attractiveness as sources of interest income to the *rentier* classes. The traders on the stock exchange began to develop a variety of new assets to maintain their customer base and their personal incomes. New government issues that mimicked in form the British 3 percent consol were offered by the peacetime governments in France, Prussia, Spain, Denmark, Russia, and Austria. The military successes of the revolting Spanish American colonies stimulated offerings of government bonds from the new Latin American states as well, followed by stocks in newly privatized mines. Many more gasworks were listed as every community in England rushed to provide its residents and businesses the gas light-

¹⁹ Hilton (1977), pp. 82-87.

²⁰ Pressnell's classic study (1956) remains the standard work on English country banks.

Figure 6

Yields of Latin Bonds



SOURCE: *Course of the Exchange*, Friday quotes.

ing that was proving so successful in London. A number of insurance companies were created when entrepreneurs saw that the existing companies seemed especially able to profit from the ease of credit and the lack of attractive alternative assets to government debt.

But the most attractive assets offered were those from Latin America, following the success of the French 5 percent *rentes*. Following the final defeat of Napoleon at Waterloo in 1815, capital flowed back to the Continent from Great Britain. Foreign holdings of British debt diminished rapidly, the price of consols rose as the supply diminished, and prices of Bank and East India stock rose in tandem. British investors used to safe returns ranging between 4 and 6 percent for the past 20 years now found their options limited to yields between 3.5 and 4.5 percent. The opportunities for investment in new issues of French 5 percent *rentes* were more attractive than continuing their holdings in consols. Figure 6 shows that the *rentes* maintained a steady return over 5 percent throughout the crisis period and offered a stable alternative to the British funds. Baring Brothers and Co., by its successful finance of Wellington's army in 1815, had established itself as the dominant merchant bank in England. By undertaking the flotation of the first two issues of French *rentes* sold to pay the reparations and sup-

port Wellington's occupation forces, Barings became the "Sixth Power" in Europe, according to the Duc de Richelieu.²¹ From February to July 1817, Barings disposed of three loans, the first two at a net price of 53 percent of par for 100 million francs each and the third at 65 percent of par, which raised 115 million francs. Yet, according to the historian of the Baring firm, no disturbance in the British trade balance or in French reserves seems to have occurred—the inflow of capital to France from Britain resulting from the issue of *rentes* seems to have been offset by indemnity payments and army contracts from France to Britain.²² (What the historian has missed, of course, is the fall in the exchange rate of the British pound that occurred at the time; the pound was still floating after the suspension of convertibility in February 1797.) From this success for British investors in foreign investment with the French *rentes*, it has traditionally been argued, came increased enthusiasm for other forms of investment, first in the bonds issued by the new government of Spain established in 1820, and then in the bonds issued by the new states emerging in Latin America.²³

The collapse of Spanish control over its American empire during the Napoleonic Wars led to a variety of independent states being formed out of the former colonies by 1820. Battling one another for control over strategic transport routes, mainly rivers and ports, and over state enterprises, mainly mines, each appealed to foreign investors as a source of government finance and as a means to substitute foreign expertise and technology for the vanquished Spanish. Their government bonds and their mining shares found a ready market in the London Stock Exchange, which had become the dominant marketplace for finance capital in the world during the Napoleonic Wars. The loan bubble of 1822-25 ensued, eventually giving British foreign-bond holders their first experience with defaults by sovereign states. None of the new Latin American states emerging from the remains of the Spanish empire (Brazil remained part of the Portuguese empire) found the means, whether by exports or taxes, to service the debts they had incurred in London. Mean-

²¹ Jenks (1927), p. 36.
See also Ziegler (1988), pp. 100-11.

²² Jenks (1927), p. 37.

²³ While the focus for foreign loans was mostly on Spain and Spanish America, Greece received a loan and much-needed publicity for its then-premature efforts to break away from Turkish rule. More than 50 years later, when the Greek government was attempting to assure the international community it would go on a gold standard, part of its commitment was to resume payment on these initial bonds!

while, the net proceeds they had received after the bonds were sold at discount—and after they had paid large commissions up front—to the London investment houses were dissipated rapidly in military conflicts with neighboring states.²⁴

From 1822, when both Chile and Colombia floated bond issues with London agents, an increasing number of Latin American governments tried to find the means for financing their transition to independence from the flush pockets of British investors. The bonds they issued, in terms of the amounts actually paid up, as distinguished from the amounts actually received by the governments, were the largest single category of new investment in the London capital market in this period.²⁵ It is true, even so, that the amount was small relative to the remaining sum of the British government's funded debt—£43 million compared with £820 million.²⁶

Figure 6 compares the prices of several bond issues of the emerging South American states, as given in James Wetenhall's semiweekly *Course of the Exchange*.²⁷ At the peak of the stock market boom, there was surprising convergence in the prices of all the Latin American bonds. It was only in the ensuing two years that information on the fiscal capacity of the individual governments and their respective economic bases enabled the London market to distinguish among them. Mexico and the Andean countries were clearly marked to be disaster cases by the end of 1828, while already Argentina and Brazil were demonstrating their attractiveness to British investors, an allure that would increase until the Baring crisis of 1890.

The pricing pattern of foreign government bonds displayed in Figure 6 is a classic illustration of the so-called "lemons" problem that can occur in emerging financial markets. In this case, it appears that investors in the London market priced the Latin American bonds at a substantial discount so that the typical 5 percent or 6 percent yield on par value could provide a substantial risk premium compared with both the British funds and the now-seasoned and solid French government

debt. Until further information came in from newspapers or merchants' letters from the respective countries concerning their fiscal situation and credit arrangements, however, they all looked much alike, and all were priced at punitively low levels. This discouraged higher-quality governments, perhaps Brazil, from issuing debt until the House of Rothschild had assured itself that adequate provision was forthcoming for servicing it. But it also encouraged lower-quality governments, perhaps Peru, to issue debt early on. Indeed, at one point in October 1822, it induced the Scottish adventurer, Gregor McGregor, to issue bonds from an imaginary government of Poyais, presumably located around Honduras. On October 29, 1822, the official *Course of the Exchange* quoted Poyais scrip for 6 percent bonds at 81½ percent of par, compared with Peru's 6 percent bonds at 86¾, Chile's at 84, and Colombia's at 86!

Only as more information came in or as investors began to pull out of higher-risk investments and seek safer, better-quality assets did price differences begin to show up. This change began to occur in the fall of 1825 for the new government issues from Latin America; it did not affect the now-seasoned and secure French *rentes* at all. While the history of the various bond issues is extremely colorful, it appears that Leland Jenks' assessment of many years ago is still fundamentally correct—their main effect was to enrich some issuing agents and impoverish or imperil others, including the redoubtable Barings. Jenks notes that the typical arrangement mimicked that devised by the Goldschmidts for the Colombian loan of 1824, whereby "[t]hey received a commission for raising the money, a commission for spending it, and a commission for paying it back."²⁸ On the other hand, the most recent historian of Barings argues that they lost money on the Argentina loan by buying back large amounts of it in a futile effort to maintain the market price of the bonds and lost even more on the ill-advised investments in Mexico of Francis Baring, the second son of Alexander Baring.²⁹ In the case of both the Rothschilds and the Barings, however, it appears that the sums risked were relatively

²⁴ Dawson (1990) provides a readable account of this episode, but Marichal (1989) puts it into a longer-run Latin American perspective. Brazilian bonds never went into default, which is why their prices remained the highest among the Latin American bonds in the late 1820s. They were, in fact, the only ones issued by the Rothschilds. None of their government bond issues for Austria, Belgium, Naples, Prussia, or Russia defaulted in this period (Doubleday, p. 281).

²⁵ Gayer, Rostow, and Schwartz (1975), vol. I, p. 189.

²⁶ Gayer, Rostow, and Schwartz (1975), vol. I, p. 408, fn. 8, and Mitchell (1976), p. 402. These are nominal values in each case, but government debt was then trading at close to par, so its market value was roughly the same.

²⁷ Beginning probably in January 1825, Wetenhall apparently also began publishing a daily stock price list (No. 171 was for July 8, 1825), with slightly different coverage than that provided in his officially sanctioned, twice-weekly price sheet (which was No. 11,131 for July 8, 1825)—a bit of circumstantial evidence for the information-asymmetry theory, but I have located only one issue of the daily list for this period.

²⁸ Jenks (1927), p. 49.

²⁹ Ziegler (1988), pp. 102-07.

small and the risks generally appreciated even by an inexperienced British public. We have to look elsewhere for an explanation of the 1825 speculative bubble and collapse, perhaps in the new domestic companies that were formed.

Domestic Securities

As the London stock market had proved attractive for the new issues of debt by the restored European governments and the revolutionary Latin American governments, by 1824 a much wider variety of newly formed joint-stock corporations offered their shares to London investors. In the words of a contemporary observer, "bubble schemes came out in shoals like herring from the Polar Seas."³⁰ The success of three companies floated to exploit the mineral resources of Mexico—the Real del Monte Association, the United Mexican Company, and the Anglo-American Company led to flotations of domestic projects in early 1824. In February 1824, the Barings and Rothschilds cooperated to found the Alliance British and Foreign Life & Fire Insurance Company. It enjoyed an immediate, enormous success.³¹ In March there were 30 bills before Parliament to establish some kind of joint-stock enterprise, whether a private undertaking for issuing insurance or opening a mine, or a public utility such as gas or waterworks, or a canal, dock, or bridge. In April there were 250 such bills.³²

The limitation of joint-stock enterprises to these fields arose from the limitations, first, of the Bubble Act of 1720, which forbade joint-stock corporations from engaging in activities other than those specifically stated in their charters; second, of common law, which made stockholders in co-partnerships with transferable shares (i.e., unincorporated joint-stock enterprises) liable in unlimited amount, proportional to their shares in the equity of the company; and, third, of the limited liability and ease of transfer for shareholders in mines created on the "cost-book" system.³³ They were subject only to calls up to the capitalization authorized by the cost-book, which required

to establish. Despite the resistance of Parliament to incorporating new companies with limited liability, the speculative mania continued with new projects floated daily. Speculation was encouraged on the possibility that an enterprise might receive a charter, based on the connections in Parliament of its board of directors.

The extent of the speculative fervor and its lack of permanent effect was spelled out by a contemporary stockbroker, Henry English, and his analysis has remained authoritative to this day. Briefly, English listed 624 companies that were floated in the years 1824 and 1825. They had a capitalization of £372,173,100. By 1827, only 127 of these existed with a capitalization of £102,781,600, of which only £15,185,950 had been paid in, but the market value had sunk even lower to only £9,303,950.³⁴ But even at the height of the enthusiasm for new issues, the total capital paid in had amounted to no more than £49 million.³⁵ Compared with the stock of government debt available (£820 million), this amount was still almost as limited in scale as the investments in Latin American securities. Perhaps we have to look still further for an explanation of the events of 1825. The role of the country banks, in particular, needs to be examined.

The Country Banks

The expansion of the economy continued through 1823 and 1824. By April 1825 at the latest, the stock market boom reached its peak (Figure 7),³⁶ and the resulting drop in collateral values, combined with a contraction by the Bank of England in its note issue, began to create jitters in the money market. By July, city bankers were beginning to be more cautious. In September, reports of difficulties by country banks in Devon and Cornwall began to appear. All country banks were then faced with the seasonal strain that occurred each autumn. Government tax revenues were required to be remitted to London in the autumn before interest payments on government debt were made in December. This caused more country banks to fail in October and November

³⁰ Hunt (1936), p. 30, quoting a letter to *The Times*, April 20, 1826.

³¹ Hunt (1936), p. 32.

³² Hunt (1936), p. 32.

³³ Burt (1984), pp. 74-81 describes the cost-book system and its advantages for investors at this time.

³⁴ As reproduced in Hunt (1936), p. 46.

³⁵ Gayer, Rostow, and Schwartz (1975), vol. I, p. 414.

³⁶ According to my own value-weighted index of 50 of the most important stocks traded on the London Stock Exchange, the peak occurs in March. Gayer, Rostow, and Schwartz (1975), using different weights for the same stocks, put the peak in April, although the actual peak if mine stocks are included occurs in January 1825.

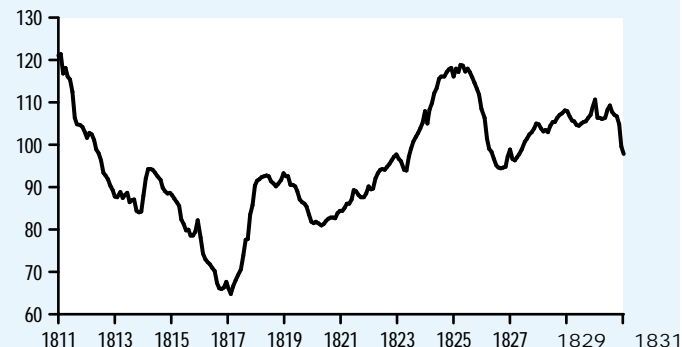
in 1825. When the major London banks of Wentworth, Chaloner, & Rishworth and Pole, Thornton & Co. failed on December 8 and 13, respectively, and forced dozens of correspondent country banks to suspend payments, a general run began on country banks. These banks, in turn, came to their London banks for cash, and the London banks turned to the Bank of England. Finally, the directors of the Bank woke up to the crisis and began to discount bills and notes for their customers as fast as they could with diminished staff and resources. The pressure on the Bank lasted for the rest of December, depleted their bullion reserves, and forced them to issue small £1 and £2 notes again but did not force them to suspend payments as they had feared.

The credit collapse led to widespread bank failures (73 out of the 770 banks in England and even three out of the 36 in Scotland)³⁷ and a massive wave of bankruptcies in the rest of the economy, reaching an unprecedented peak in April 1826.³⁸ The Bank of England and the London private banks joined forces for once by blaming both the speculative boom and the subsequent credit collapse on excessive note issue by the country banks. They argued that the ease of note issue had encouraged the more careless or unscrupulous partners in country banks to invest in high-risk, high-return financial ventures such as the Poyais scrip that were being offered on the London capital market. The historian of British country banks, L.S. Pressnell, discounts this factor as the driving force both in the boom and in the timing of the collapse. Relying on evidence supplied by Henry Burgess, secretary of the Committee of Country Bankers, to the Bank Charter Committee of 1832, Pressnell notes that many country banks did increase their note issue substantially between July 1824 and July 1825. Burgess' unweighted index of the indexes of note issues provided to him by 122 country banks for the month of July in each year from 1818 through 1825 gave an overall average increase of 6.7 percent in the final year before the crisis, while 50 of the banks showed increases of more than 10 percent.³⁹

Figure 7

London Stock Price Index

1822=100



SOURCE: Compiled by author from quotes for 50 companies in the *Course of the Exchange*.

Figure 8 shows, however, that the final level, reached in July 1825, was barely above the initial level of July 1818, which had fallen sharply until 1822. No doubt the country banks expanded their note issue in the years immediately preceding the crash. But much of this expansion was simply restoring note issue that had been reduced in response to Parliament's acts of 1816 and 1819. What is missing, of course, is evidence on the extent to which the initial withdrawal of notes was compensated for by an increase in demand deposits. If there was a one-to-one compensation (which is highly unlikely), then the expansion of note issues in 1824 and 1825 may have helped fuel the speculative fires burning on the London stock exchange. However, the expansion may also have been compensated by a reduction of deposits. Burgess' figures were collected from banks operating in 1830, which clearly had not been among the unfortunate firms that disappeared in the aftermath of the crisis. If those firms were much more aggressive than the survivors that appear in Burgess' large sample, then the country banks may remain indicted as a major contributing cause of the crisis of 1825.

Pressnell gives balance sheets from a handful of country banks that were operating in this period and whose records have survived. The bank Barnard & Co. of Bed-

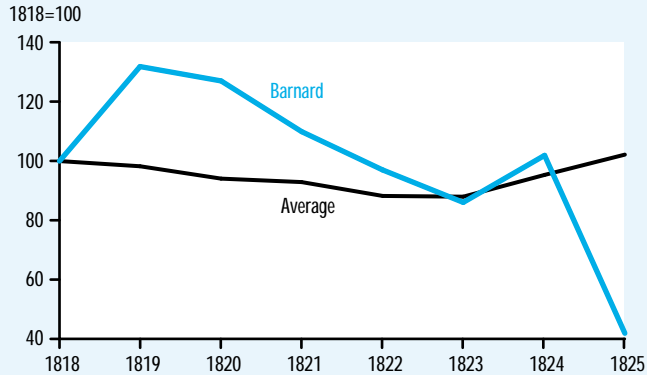
³⁷ Kindleberger (1984), p. 83.

³⁸ Gayer, Rostow and Schwartz (1975), vol. 1, p. 205.

³⁹ Pressnell (1956), pp. 480-81.

Figure 8

Average Issues of 122 Country Banks and of Barnard & Co. of Bedford



SOURCE: Great Britain (1968), pp. 414-16 and Pressnell, pp. 512-13.

ford had an unusually rich set of accounts covering the entire period from 1800 to 1845. On the asset side of the balance sheet, this bank increased its cash holding substantially in 1821-23, and then greatly in 1824. By the end of 1825, however, its holdings had fallen from £106,559 to only £31,201, the lowest level since the crisis year of 1810. While the bank had begun to place surplus funds with a London bill-broker in 1823, this account remained quite small until the 1830s. Total assets fell sharply in 1825, from £152,585 to £109,079, but they fell less than the cash account. The difference came primarily in a doubling of the bank's balance with its London correspondent, from £33,877 to £66,256.⁴⁰ Apparently, this bank was one of the solvent banks whose surplus funds could be channeled to others through the intermediation of its London bank.

On the liability side of the Barnard & Co. bank, the note issues followed much the same path as the average shown by Burgess for his sample of 122 country banks (see Figure 8). The most striking difference occurs in 1825, but this is mostly explained by the fall that must have occurred in the note issue of all the country banks between July, for the average of the 122 banks, and December, for Barnard & Co. As far as Barnard's deposits are concerned, they fell as well from 1818 through 1823, but not as

much as note issues. Deposits rose in 1824 more than note issues, and although they fell in 1825 as well, they ended the year of 1825 at a higher level than note issues. This was a bank that stayed clear of the speculative frenzy going on in London, weathered the storm and survived to prosper afterwards. Its good fortune was due, no doubt, to the large loss sustained by the founder, Joseph Barnard, the one time he did place funds in speculative issues available in London. That loss occurred in the crisis of 1810, and Barnard's "warning to those who may succeed me" from that incident was apparently heeded in 1825.⁴¹

If the record of accomplishment of Barnard & Co. may be dismissed as unrepresentative of the "problem" country banks, we can also examine the accounts of a country bank that did most of its business by note issue and that failed in the wave of bankruptcies occurring in December 1825. Figure 9 shows the gross level of £1 notes issued over the period 1817-25 of one of the unfortunates—the country bank of Sarah Crickett in Chelmsford, Essex County.⁴² These do not take account of notes that may have been retired, but by plotting the highest number found for each date (notes were issued weekly) on a semi-logarithmic scale, we can get a sense of how this bank, which seemed to rely more on note issue than deposit accounts, responded to the vagaries caused by the Bank of England's return to the gold standard in 1821.

At first glance, this bank shows quite a different pattern of note issuing from that of the successful banks shown in Figure 8. At the outset of business in 1817, it increased its issue of £1 notes very rapidly (it's interesting that these were still outstanding in 1826 when the holders turned them in to the Bankruptcy Commission), as a startup bank might be expected to do. But then it increased issues rapidly again in 1819, when it made sense for country banks to start withdrawing their notes, given that the Bank of England had resumed cash payments, and the Act of 1816 mandated that country banknotes under £5 should cease entirely two years later. The steady rise of notes in the early 1820s does not show any

⁴⁰ Pressnell (1956), pp. 512-13.

⁴¹ Pressnell (1956), pp. 433-34

⁴² Public Record Office, B3/1008 and B3/1010-1029 contains the files of the Bankruptcy Commission for Sarah Crickett and her bank.

similar acceleration until the end of 1825, when the crisis was breaking.

Given the bank's location in one of the richest agricultural districts of England, and the prevalence of small tradesmen and farmers among its noteholders, it may be that the note surges shown in 1817 and 1819 reflect local harvest conditions more than responses to the changes occurring in the London money market. They do occur in the fall of those years. It must be emphasized that these totals are cumulative and take no account of notes that may have been withdrawn when presented to the bank, so they are not comparable to the net issues outstanding, shown in Figure 8.

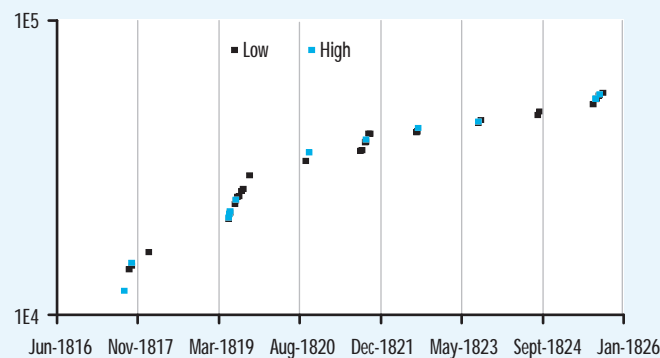
By the end of the Bankruptcy Commission for Crickett's Bank in the mid-1830s, 18 shillings in the pound (i.e., 90 percent) of the claims had been deposited in the assignee's account. Given the small sums claimed by most creditors, the length of time taken by the Bankruptcy Commission, and the location of the assignee's account at the Bank of England in London, much of the funds available for payment were not disbursed—a situation that was convenient for the commissioners and the assignee, who could then cover their charges very easily from the account. But for our purposes, the apparent willingness of so many note holders to retain their notes for long periods of time, plus the bank's basic soundness when its claims and assets were finally realized by the Bankruptcy Commission, indicates that this particular failure was an unfortunate victim of circumstances, not a contributor to the crisis.

The Bank of England

To understand the internal causes of the crisis of 1825, therefore, we must turn back to the role of the Bank of England—in particular, the relationship between its activities as a potential lender of last resort and the wave of bankruptcies that disrupted English commercial life for years following the crisis of 1825. This ground was covered many years ago by Norman Silberling (1923). He simply counted the number of bankruptcy commissions opened as recorded in

Figure 9

Chelmsford Country Bank One Pound Notes Issued

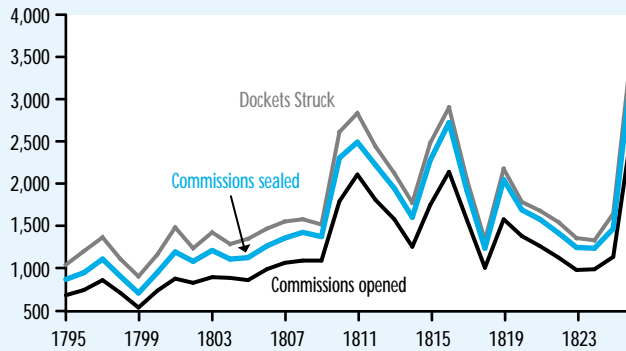


SOURCE: Public Record Office, B/3/1029. Sample figures extracted by author.

the *London Gazette*. These have some weaknesses as discussed in Mitchell (1976, pp. 245-46), Duffy (1985, pp. 331-35), and Marriner (1989), but they are still useful as general indicators of the incidence and timing of bankruptcy over regions and industries. The problems arise from British bankruptcy law, which confined the possibility of bankruptcy to firms engaged in trade, excluding farms, factories, and the other professions. The latter were covered by the much harsher law of insolvency, but in case of difficulty they did what they could to come under bankruptcy law. To do this, they had to be engaged to a significant extent in trade, stop payment on debts amounting to over £100, and refuse in front of witnesses to pay a legitimate creditor. The creditor would then petition with other major creditors to open a commission; this was "striking a docket." If the Bankruptcy Court judged that the creditors had a legitimate case, they would "seal a commission," which would authorize a trio of commissioners to begin collecting evidence of the bankrupt's assets and liabilities. As this was an expensive procedure, which could last for years and eat up the remaining assets of the bankrupt in commissioners' fees, mutual efforts were often made to settle the dispute before the proceedings began. Once they began, the "commission opened." Figure 10, from Duffy (1985), shows the

Figure 10

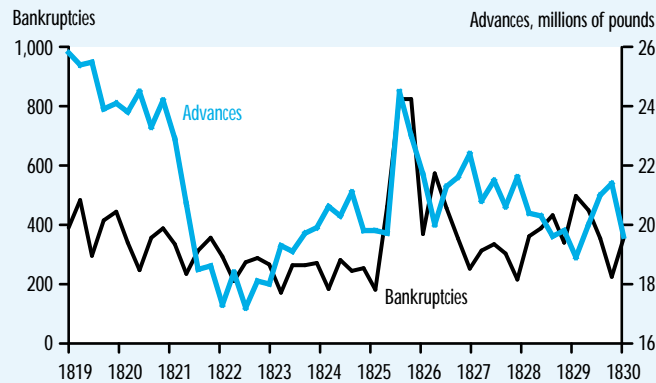
Bankruptcy Records Compared



SOURCE: Duffy (1985), p. 399.

Figure 11

Bankruptcies and Bank of England Advances



SOURCE: Silberling (1923).

comparison of the pattern of advances with that of banknote issue, prices, and bankruptcies, he concluded that advances were a much better barometer of prices and business conditions than banknote issues and, moreover, that in general the claim of the Bank's officers that they followed a real-bills doctrine—responding passively to the demands of business for credit on realized trade contracts—was justified. The exceptional decrease in advances after 1819, driven by the Bank's determination to accumulate sufficient bullion to validate the resumption of convertibility of its banknotes into specie at the pre-war par in terms of gold, did not show up in bankruptcies.⁴³

Closer examination of the relationship between advances and bankruptcies from 1819 through 1830, shown in Figure 11, shows possible encouragement of speculative movements in 1823 and 1824 but moderation in 1825 until the Bank responded to the crisis at the end of the year by increasing the total of advances enormously in the first quarter of 1826. Afterwards, Silberling's figures show a distinctive inverse pattern, which is so short in duration that it could again be consistent with the real-bills story, especially if we allow a lag of six months to a year from the actual credit restriction to the recorded opening of a bankruptcy commission.

Parliament collected evidence in the years afterward to determine the pattern of bankruptcies. Table 2 distinguishes town and country bankruptcies opened within the total of commissions sealed from 1822 through 1833. Again, 1826 shows up as the crisis year, but what is striking here is the much more dramatic jump in the country bankruptcies, a situation that continued afterwards with a consistently higher number of bankruptcies for country banks. Moreover, bankruptcies of banks located within 65 miles of London totaled only 38 from February 7, 1824, to March 22, 1832, compared to a total of 116 for banks located outside the 65-mile radius from London. Only 12 of the London banks failed in the crisis period from December 13, 1825, to March 11, 1826, while 52 of the country banks failed from December 12, 1825, to

⁴³ Doubleday rants about the widespread distress created from passage of Peel's Act in 1819 until its final full effect in May 1823, "but, in fact, his prime example of distress . . . calculated to tear in pieces, almost, the heart of every just and sensible man that reads it," deals with the loss of a country estate purchased with wartime profits by the son of a trader who went bankrupt in 1822. Clearly, this was not a general condition.

annual numbers of dockets struck, commissions sealed, and commissions opened. Regardless of which measure of financial distress is taken, the crash of the London stock market at the end of 1825 resulted in record numbers of business failures.

The 1825 spike is all the more anomalous for coming at the end of a period of declining numbers of bankruptcies, with no major changes in trade direction or policy evident, much less any sign of renewed warfare. From 1794 on, Silberling constructed quarterly totals of the advances made by the Bank of England to its private customers and the government. From his

Table 2

Bankruptcy Commissions Sealed (total) and Opened (town and country): 1822-32

Year	Commissions Sealed	Town Commissions Opened	Country Commissions Opened
1822	1,419	468	534
1823	1,250	532	396
1824	1,240	574	396
1825	1,475	683	448
1826	3,307	1,229	1,220
1827	1,688	671	742
1828	1,519	601	620
1829	2,150	809	910
1830	1,720	661	748
1831	1,886	692	770
1832	1,772	643	740

SOURCE: British Parliamentary Papers, 1833, XXXI, p. 342.

March 11, 1826. These bankruptcy records indicate further that the financial panic was transmitted through the credit channels of Great Britain, radiating out from the London capital market, and had its final impact in the trade and industry of the countryside through the liquidity crunch exerted upon the country banks.

Picking up the Pieces

The question naturally arises: Could the Bank of England have prevented this financial disaster, say, by acting earlier and as a monopoly bank bearing more responsibility to the public than to its stockholders? It must bear part of the blame for the expansion of the money supply that apparently arose in 1823-24 and especially for failing to offset the monetary expansion occurring elsewhere. But if, as Duffy suggests, it was the Bank's drawing account activity rather than its note issue that played the strongest role in easing or constraining the credit conditions in the London money market, then the Bank of England can be no more culpable than the country banks. The sums advanced from

the Drawing Office plummeted after resumption of cash payments in 1821, and the Bank of England restricted drawings through most of 1825, never rising to the pre-resumption level until the first quarter of 1826. But this analysis simply casts the Bank of England in the role of just another bank, albeit much larger and more influential. If it was supposed, through its ability, to combine up-to-date, authoritative information from the worlds of finance, commerce, and government policy, it might be expected to have played an earlier, more constructive role. In fact, the evidence from the minutes of the Court of Directors of the Bank indicate that the Bank was taken by surprise and responded with much too little, much too late.

The Bank of England

The first mention of the crisis occurs on December 8, 1825, when "The Governor [Cornelius Buller] acquainted the Court that he had with the concurrence of the Deputy Governor [John Baker Richards] and several of the Committee of Treasury afforded assistance to the banking house of Sir Peter Pole, etc."⁴⁴ This episode is

⁴⁴ Bank of England, TVC3/11 G4/48, fo. 150.

described in vivid detail by the sister of Henry Thornton Jr., the active partner of Pole, Thornton & Co. at the time. On the previous Saturday, the governor and deputy governor counted out £400,000 in bills personally to Henry Thornton, Jr., at the Bank without any clerks present.⁴⁵ All this was done to keep it secret so that other large London banks would not press their claims as well. A responsible lender of last resort would have publicized the cash infusion to reassure the public in general. Instead, the run on Pole & Thornton continued unabated, causing the company to fail by the end of the week. Then the deluge of demands for advances by other banks overwhelmed the Bank's Drawing Office.

Table 3 shows the breakdown of the Bank of England's discounts by branch of trade. I have ordered them by the largest amounts disbursed in the quarter ending in December 1825, when "Bankers" dominate. However, as late as November, the bankers were not unusually present in the Bank of England's offices. Indeed, it appears that the merchants engaged in the trades with "Hamburg, France, Spain, Portugal, South America, the Baltic, and General Merchants" were especially pressing in their demands upon the Bank in the quarter ending in June 1825. No other branch of trade showed unusual demands until the final month of 1825. But this alone should have warned the Bank of repercussions that would follow. If it was the South American merchants who accounted for the bulk of the increased demands for accommodation in June, this gave the Bank much better warning than could have been available to any country banker that remittances from South America were in disarray. This would affect the disbursement of dividends upon mining stocks as well as interest on government bonds. Instead of reacting to this information in a constructive way, however, the Bank decided it would be risky to advance funds on some categories of collateral, kept its rate of discount high compared with the rest of the market, and raised its rate of discount back to 5 percent in early December 1825, when demands became increasingly urgent. In

the interim, the Bank chose to respond to the lack of discounting business by cutting costs. The number of clerks in the Drawing Office had fallen from 17 to 11 by February 1825, and of these 11, four were regularly sent to serve in other departments.⁴⁶

The Bank of England's first proactive response at the level of the Court of Directors did not appear until January 12, 1826. At that meeting the court appointed a committee to report on the practicality and expediency of establishing branch banks. The very next week, the committee reported "Branch banks would be highly expedient." The reasons it gave, however, were quite revealing of the ruling mentality among Bank of England leaders at the time. The benefits were listed first for the Bank of England and then for the general public (see Table 4). The practicality was not an issue, given Scotland's experience for 80 years, not to mention the success of the Bank of the United States, the Bank of Ireland, and the recently established Provincial Bank of Ireland.

In this report, the Bank of England was clearly responding belatedly to the government's decision to force it to open branches and to promote large, joint-stock banks. The week after the report was laid before the court, the governor presented to the directors the letter he had received from Lord Liverpool, First Lord of the Treasury, and Mr. Frederick Robinson, Chancellor of the Exchequer. The arguments laid out in the letter show that the government, in this instance, was determined to work around the Bank rather than through it. The Liverpool-Robinson letter began with the assertion, "there can be no doubt that the Principal Source of it [the recent distress] is to be found in the rash spirit of Speculation which has pervaded the Country for some time, supported, fostered, and encouraged by the Country Banks."⁴⁷ So, the letter continued, it seemed advisable to repeal the authority of the country banks to issue small notes and return to a gold circulation. This action would spread pressure on the exchanges over a wider surface and make it felt earlier—a clear reference to the Bank's negligence in 1825. But this alone would not suffice; after all, a similar

⁴⁵ Forster (1956), p. 117.

⁴⁶ Bank of England, C 35/2 4783/2, No. 2, "Special Discount Committee from 12 Feb. 1811 to 26 Jan. 1830 inclusive," fo. 159. Later, the committee recommended a further reduction in the number of clerks (fos. 164-65).

⁴⁷ Bank of England, TVC3/11 G4/48, fos. 201-2.

Table 3

Amount of Each Branch of Trade in Discounts
(thousands of pounds sterling)

Branch	Mar	Jun	Sept	Nov	Dec
Bankers	273	595	608	699	3,408
Hamburg, Fr., Sp., Port, S. Amer., Baltic and general merchants	411	1,809	1,094	1,238	2,955
Tea dealers, grocers, and sugar refiners	275	334	324	470	959
Russian merchants and dealers in hemp and tallow	46	95	154	243	733
Blackwell Hall factors and warehousemen woolen drapers	188	337	400	441	701
Linen drapers and Manchester warehousemen	220	300	363	413	594
West India merchants	120	156	196	242	559
Irish merchants, factors, dealers	114	191	201	272	551
Hop merchants	113	130	144	145	503
North American merchants	55	65	164	184	308
Silk men, mfrs. gauze weavers	137	185	226	247	297
Wine and brandy merchants	147	229	158	200	290
Corn factors	137	195	135	135	293
Dry salters	75	118	167	122	234
El agents and merchants	19	93	13	68	226
Leather sellers, factors, tanners	177	254	259	190	224
Stationers	110	141	182	162	210
Timber merchants	81	85	148	160	200
Scotch factors and merchants	58	67	67	51	154
Totals (42 branches in all)	3,080	5,865	5,588	6,324	14,430

SOURCE: Bank of England. C 36/16 TVF 3/25 "Account of the Principal Amounts Discounted in Bills and Note per month for the years 1825 and 1826."

convulsion had occurred in 1793 when there were no small notes and Scotland had "escaped all the convulsions which have occurred in the Money Market of England for the last thirty-five years, though Scotland during the whole of that time has had a circulation of One-Pound Notes." In the past, the Bank of England "may have been in Itself and by Itself fully equal to all the important Duties & Operations confided to it," but "the rise of country banks alone shows it is no longer up to the tasks required from the increased wealth and new wants of the Country."⁴⁸

The government proposed two remedies: The Bank should establish branches of its own, and it should give up its exclusive privilege to issue notes within a certain distance from the Metropolis. The first suggestion was impracticable, in the government's view, and it was obvious that Parliament would never agree to an extension of the Bank's privileges in London. All in all, the government's proposed legislation would remove pressure from the Bank, and it would still have the government's business and be the only establishment at which the dividends on the national

⁴⁸ Bank of England, TVC3/11 G4/48, fo. 204.

Table 4

Report of the Bank of England's Committee on Branch Banking

Benefits to the Bank of England:

- 1) Increase circulation of Bank of England notes.
- 2) Increase Bank's control of whole paper circulation "and enable it to prevent a recurrence of such a convulsion as we have lately seen."
- 3) Provide large deposits.
- 4) Protect the Bank against competition of "large Banking Companies" if the government should encourage them.

Benefits to the General Public:

- 1) Provide more secure provincial circulation.
- 2) "Disasters arising from the sudden expansion and contraction of the currency would not so often occur."
- 3) Increase security and facility of transmission of money.
- 4) Provide secure places of deposit "in every quarter of the Kingdom."

SOURCE: Bank of England. TVC3/11 G4/48 "April 13, 1825, to 6th April, 1826, Minutes of the Court of Directors," folio 194.

debt would be paid. With this condescending argument, the letter concluded, "so we hope the Bank will make no difficulty in giving up their privileges, in respect of the number of Partners in Banking as to any District [left blank] Miles from the Metropolis."⁴⁹

Clearly, the Bank had failed to meet the recent challenges adequately, and the government was determined to create competitive banks that might better serve the public and, presumably, the government. The Bank's response was understandably churlish, which Liverpool informed them on January 25 he regretted, but he was determined to move ahead, merely asking if the government had any amendments to propose to the bill pending in Parliament to permit joint-stock banking. He did then accede to encouraging them to set up their own branches as well. Thus, the Bank went ahead with establishing branches, gradually dispersing seven of them into the industrial cities of Manchester, Gloucester, Swansea, Birmingham, Liverpool, Bristol, and Leeds, starting in 1828, and adding Exeter, Newcastle, Hull, and Norwich in 1829, when small note issues by the remaining country banks ceased. By the time of the Bank Char-

ter Committee in 1832, the branches at Manchester and Birmingham were clearly the most dominant in terms of note issues and bills discounted.⁵⁰

The Commercial Bill Market

Wilfred T. C. King, in his classic study of the London discount market, identified the crisis of 1825 as bringing about "changes in the banking structure which were responsible for every major influence upon market evolution in the succeeding twenty years."⁵¹ His analysis of the crisis follows very much the lines above, adding only the additional factor that a series of good harvests had made the country banks in agricultural districts especially flush with funds. In terms of the conditions in the money market, however, the effects were limited in duration. By June of 1826, the money market rate had fallen well below 5 percent, and the Bank of England was no longer besieged with requests for re-discounting of bills. Of more interest to King were the implications for the development of the bill market in London from four changes in the financial structure that occurred in response to the crisis. These were: 1) the beginnings of joint-stock banking, 2) the establishment of

⁴⁹ Bank of England, TVC3/11 G4/48, fo. 215.

⁵⁰ Bank Charter Committee Report, Appendix No. 46, p. 47.

⁵¹ King (1936), p. 35.

Bank of England branches, 3) the cessation of re-discounting by the London private banks, and 4) the assumption of some central banking functions by the Bank of England.⁵²

The new joint-stock banks had to function outside London (thanks to the resistance of the Bank of England) and they had to compete with existing country banks by attracting deposits rather than issuing notes. King does not explain why this was so, noting only that those joint-stock banks that began business by issuing notes gave them up after a few years. It appears that this development arose in large part because the Bank of England branches refused to do business with joint-stock banks that did issue notes.⁵³ Given that their business was necessarily local and that they had no notes to redeem, the new joint-stock banks kept minimum reserves, relying upon re-discounting bills of exchange to obtain cash when needed to meet withdrawals of deposits. They also had a strong preference for short-term loans in the form of bills, rather than government securities, as had been the case earlier.⁵⁴ As the country banks wound up their small-note business, they also turned increasingly toward deposits and the behavior of joint-stock banks, as described by King. King concludes that it was the period from roughly 1830 until the 1860s or 1870s that the bill market became the most important way in which domestic credit was distributed within Great Britain.⁵⁵

The second change identified by King, the establishment of branches by the Bank of England, also promoted the rise of the bill market. While initially the Bank's branches would seem to be serious competitors to the local banks, they limited their lending activities strictly to commercial bills and then only to very short-term and highest-quality bills, as approved in London. This limitation effectively kept business intact for the existing local banks, save that their commissions on discounting bills were reduced by the knowledge among their customers that the Bank of England branches did not charge commissions. But the facility of making remittances to London and receiving credits back from London through the Bank's

branches helped local bankers use the London bill market more cheaply. A bill drawn locally could now be sent directly to a bill broker in London, who would be instructed to pay the proceeds into the Bank of England for the credit of the local bank at the branch bank. Moreover, a trader in Leeds could pay or receive money in Birmingham through the medium of the Bank's branches, for the "simple charge of postage of a letter."⁵⁶ In short, the branches of the Bank of England greatly improved the payment mechanism that underlay the smooth functioning of the bill market.

The third change noted by King was the withdrawal of London private banks from re-discounting after the 1825 crisis. The run upon the Bank of England—as well as its obvious reluctance to hold too much reserves in gold, which was not earning income for its stockholders—convinced the London banks they should not rely on the Bank of England exclusively for cash in times of pressure. Instead, they turned to providing call loans to bill brokers, who could, in turn, increasingly become bill dealers. Instead of delaying discounting of bills in London until a matching buyer had been found for the bills offered for sale, larger firms could now purchase the bills immediately, using funds on deposit with them by the London private banks.⁵⁷ Only a few firms were as yet large enough to be able to risk this next step, moving from brokering to dealing in bills. Even those like Gurney's probably would not have done it then had not the market rate of discount fallen below the usury limit of 5 percent. Had it been at or above the usury limit, there would have been no possibility of making a profit from strict dealing.

The final step in completing the new structure did not occur until 1830, when the Bank of England opened its re-discount facilities to the bill brokers. Even this was not sufficient to overcome the informational asymmetries that could still arise in the market and that lay at the heart of later crises when the emerging bill market was abused opportunistically. The remaining problem was the Bank's continued refusal to discount at market rates, meaning that it

⁵² King (1936), p. 38.

⁵³ Testimony by Henry Burgess, the Secretary of the Association of Country Banks to the Committee on Bank of England Charter, 5324-26, in *Great Britain* (1968), pp. 427-28.

⁵⁴ Pressnell (1956) later confirmed this tendency, even for country banks, pp. 415-34.

⁵⁵ King (1936), p. 41.

⁵⁶ Testimony of William Beckett to the Committee on Charter of Bank of England, 1436-38, in *Great Britain* (1968), p. 101.

⁵⁷ King (1936), p. 64.

was unaware of emerging imbalances in the demand and supply of bills of exchange until a large excess demand for cash showed up at the Drawing Office, as in December 1825. Only when the practice of maintaining fixed discount rates at the Bank was foresaken in the crisis of 1847 did the role of the "Bank Rate" come to play its key regulating role in the British financial system. But the information flows that had arisen through the medium of the bill market enabled the London banks to keep closer tabs on the conditions of the country banks, whether they were in agricultural or industrial districts, essentially through the intermediation of the London discount houses. Further improvements in the management of information flows within the entire financial structure were elicited in response to later financial crises, caused by new, unanticipated shocks encountered as the global economy of the nineteenth century was created.

POLICY LESSONS?

The evidence of the bankruptcies certainly suggest that problems of adverse selection in the London credit markets arose in intensified form during the 1824-25 bubble on the London stock market. Combined with the evidence on changing yield spreads for East India Company stock compared with Bank of England stock, and especially with the evidence of the initial bundling and then wide dispersion of yields on the various Latin American government bonds, it lends support to the hypothesis that the problem of information asymmetry, always present in financial markets, became especially severe in the London markets in the years leading to the crash of 1825.

Asymmetric information is the term applied to the usual situation in which borrowers know more about the actual investment projects they are carrying out than do the lenders. Lenders, knowing this, charge a premium proportional to the uncertainty they feel about the borrowers in question. This situation, in turn, creates an adverse selection problem, in which

higher-quality borrowers are reluctant to pay the high interest rates imposed by the market, while lower-quality borrowers are willing to accept the rates and to default if their ventures fail. In an expanding market, which the London stock exchange certainly was in the boom years of 1806 to 1807 and again in the early 1820s, the availability of loanable funds at premium rates will attract lemons to the market (say, Mexican mines) and discourage borrowing by sound enterprises (say, Brazilian diamonds). Borrowers turn back to internal sources of funds or to a compressed circle of lenders who know their superior quality and are willing to extend credit at lower rates.

In the case of British firms in the 1820s, the compressed circle of knowledgeable, low-interest lenders was the web of country banks that had arisen in the past three decades. The continued credit access of high-quality firms, however, depends in each case upon the continued liquidity of the small, local financial intermediaries. Their willingness to continue lending at preferential rates is limited increasingly by the risk of withdrawals by depositors who wish to participate in the high-interest, high-risk investments available in the national financial market. A financial boom of the kind normally experienced before financial crises can discourage real investment, therefore, and intensify the lemons problem as high-quality borrowers withdraw from the loanable funds market.⁵⁸ It can also place increasing pressure on local financial intermediaries that specialize in monitoring credit to local enterprises. It cannot be mere coincidence that the collapse of the bubble of 1825, according to one account, was set off by the refusal of a country bank in Bristol to honor the request of a Mr. Jones to redeem in gold its notes that he presented.⁵⁹ The *coup de grâce* occurs when higher-risk borrowers are asked to provide collateral for additional loans, and the financial collapse decreases the value of their collateral. The outcome is a general wave of bankruptcies.

Under public pressure, the Bubble Act was repealed in June 1825. In July 1826, joint-stock banks were allowed to establish

⁵⁸ Mishkin (1991), pp. 70-75, gives a detailed exposition of the various routes by which increases in asymmetric information may exacerbate adverse selection, monitoring, and moral hazard problems, especially if a banking panic limits the ability of financial intermediaries to serve a monitoring function.

⁵⁹ Doubleday, pp. 288-89.

beyond a 65-mile radius of London without limitation on the number of partners (the previous limit had been six). Both actions were counterproductive, if we take as given the traditional story that the entire episode was yet another example of irrational speculative bubbles derived from crowd behavior in which investors acted first too optimistically and then too pessimistically in response to fragments of information. On the basis of the information-processing story told above, however, we can conclude that both actions were constructive. Repeal of the Bubble Act sped up the Parliamentary process of granting corporate charters, limiting the speculative period during which uncertainty over the prospects of passage of the proposed charter dominated price movements in the initial share offerings. Moreover, repeal did not mean that shareholders were granted limited liability in the new joint-stock enterprises; unlimited liability remained in principle. Supplementary legislation in 1826 specified, moreover, that Parliament could determine for each charter the extent of liability of the shareholders. With these changes, Parliament both encouraged the continuation of the corporate charter business, which must have been profitable to large number of the members of Parliament, and discouraged overpricing of the subscription shares while the incorporation bill was in progress.

The collapse of country banks was one of the last examples of a banking panic in the British banking system. As Mishkin (1991) argues for U.S. banking panics, bank failures removed from the capital markets the principal monitors who could effectively distinguish borrowers by their quality without resorting to credit rationing or arbitrarily high prices for credit. Bank failures worsened the informational problems in the British capital markets. Creating joint-stock banks within which the country banks would become branches instead of correspondents helped restore this critical monitoring function to the British system. In the peculiarities of the 1826 Act, this was done by linking the various country banks within the structure of a joint-stock

bank headquartered in London. But the London headquarters performed no banking function. Its role was to process and diffuse information to the various branch offices located beyond the 65-mile radius from London.

The results of the financial crisis of 1825 were beneficial for the British government. The funded debt continued to decline, after a small rise in 1827, throughout the remainder of the century. The government's gross income remained high and comfortably above gross expenditures, save for the years 1827 and 1828, when it dropped slightly below.⁶⁰ The comfortable financial situation gave Britain the lowest interest rates on its debt of any European government throughout the nineteenth century—a great advantage whenever it became necessary to mobilize resources for armed conflict anywhere in the world.⁶¹ It also laid the basis for continuing political reform, culminating in 1834, and economic reform, culminating with the repeal of the Corn Laws and the Navigation Acts in the 1840s, and the promotion of limited liability joint-stock corporations in the 1850s and 1860s.⁶²

REFERENCES

- Acworth, Angus Whiteford. *Financial Reconstruction in England, 1815-1822*, London: P.S. King and Son Ltd., 1925.
- Burt, Roger. *The British Lead Mining Industry*, Cornwall: Dyllansow Truran, 1984.
- Clapham, John Harold. *The Bank of England, A History*, Vol. II, "1797-1914," Cambridge: University Press, 1945.
- _____. *An Economic History of Modern Britain*, Vol. I, "The Early Railway Age, 1820-1850," 2nd ed., Cambridge: University Press, 1967.
- Dawson, Frank Griffith. *The First Latin American Debt Crisis. The City of London and the 1822-25 Loan Bubble*, Yale University Press, 1990.
- Doubleday, Thomas. *A Financial, Monetary and Statistical History of England, from the Revolution of 1688 to the Present*, 2nd ed., London: Effingham Wilson, 1858-59.
- Duffy, Ian P.H. *Bankruptcy and Insolvency in London During the Industrial Revolution*, Garland Publishing Co., 1985.
- Evans, George Heberton. *British Corporation Finance, 1775-1850: A Study of Preference Shares*, Johns Hopkins Press, 1936.

⁶⁰ Mitchell (1976), pp. 392, 396, and 402.

⁶¹ See Neal (1992a), pp. 84-96, for a comparison of the British interest rates with the rest of the world.

⁶² See Neal (1992b).

- Fetter, Frank W. *Development of British Monetary Orthodoxy, 1797-1875*, Harvard University Press, 1965.
- Forster, Edward M. *Marianne Thornton, A Domestic Biography, 1797-1887*, Harcourt, Brace and Company, 1956.
- Gayer, Arthur D., W. W. Rostow, and Anna Jacobson Schwartz. *The Growth and Fluctuation of the British Economy, 1790-1850*, 2 vols., Irish University Press Series of Harper & Row, 1975.
- Great Britain. *British Parliamentary Papers, Monetary Policy, General*, Vol. 4, "Session 1831-32," "Report from the Committee of Secrecy on the Bank of England Charter," Shannon Ireland: Irish University Press, 1968.
- Great Britain. Public Record Office, Bankruptcy Commissions, B/3.
- Hamilton, James. *Time Series Analysis*, Princeton University Press, Table B-6, Case 2, p. 763.
- Hilton, Boyd. *Corn, Cash, Commerce: The Economic Policies of the Tory Governments 1815-1830*, Oxford University Press, 1977.
- Hubbard, R. Glenn, ed. *Financial Markets and Financial Crises*, University of Chicago Press, 1991.
- Hunt, Bishop Carleton. *The Development of the Business Corporation in England, 1800-1867*, Harvard University Press, 1936.
- Jenks, Leland H. *The Migration of British Capital to 1875*, Barnes and Noble, 1927.
- Kindleberger, Charles P. *A Financial History of Western Europe*, George Allen & Unwin, 1984.
- _____. "British Financial Reconstruction, 1815-22 and 1918-25," *Economics in the Long View*, Charles P. Kindleberger and Guido di Tella, eds., *Essays in Honour of W.W. Rostow*, Vol. 3, "Applications and Cases, Part II," New York University Press, 1982, pp. 105-20.
- _____. *Manias, Panics, and Crashes. A History of Financial Crises*, Basic Books, 1978.
- King, Wilfred T.C. *History of the London Discount Market*, George Routledge & Sons, 1936.
- Kynaston, David, and Richard Roberts, eds. *The Bank of England: Money, Power & Influence 1694-1994*, Oxford: Clarendon Press, 1995.
- Marichal, Carlos. *A Century of Debt Crises in Latin America: From Independence to the Great Depression, 1820-1930*, Princeton University Press, 1989.
- Marriner, Sheila. "English Bankruptcy Records and Statistics before 1850," *Economic History Review* (August 1980), pp. 351-66.
- Mishkin, Frederic S. "Asymmetric Information and Financial Crises: A Historical Perspective," *Financial Markets and Financial Crises*, R. Glenn Hubbard, ed., University of Chicago Press, 1991, pp. 69-108.
- Mitchell, Brian R. *Abstract of British Historical Statistics*, Cambridge: Cambridge University Press, 1976.
- _____. *British Historical Statistics*, Cambridge: Cambridge University Press, 1988.
- Morgan, E. Victor, and W.A. Thomas. *The Stock Exchange, Its History and Functions*, London: Elek Books, 1962.
- Neal, Larry. "The Disintegration and Re-integration of International Capital Markets in the 19th Century," *Business and Economic History* 21, 1992a, pp. 84-96.
- _____. "Commandite System," *The New Palgrave Dictionary of Money and Finance*, Murray Milgate and John Eatwell, eds., London: Macmillan, 1992b.
- _____. *The Rise of Financial Capitalism: International Capital Markets in the Age of Reason*, Cambridge: Cambridge University Press, 1990.
- Osterwald-Lenum, Michael. "A Note with Quantiles of the Asymptotic Distribution of the Maximum Likelihood Cointegration Rank Test Statistics," *Oxford Bulletin of Economics and Statistics* (August 1992), pp. 461-72.
- Pressnell, Leslie S. *Country Banking in the Industrial Revolution*, Oxford: Clarendon Press, 1956.
- Silberling, Norman J. "British Prices and Business Cycles, 1779-1850," *Review of Economics and Statistics*, V, Suppl. 2 (October 1923), pp. 223-61.
- Smart, William. *Economic Annals of the Nineteenth Century, 1821-1830*, Vol. II., Augustus M. Kelley, 1911, reprinted 1964.
- Ziegler, Philip. *The Sixth Great Power: A History of One of the Greatest of All Banking Families, the House of Barings, 1762-1929*, Alfred A. Knopf, 1988.